

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II**

DATE: April 30, 2003

SUBJECT: National Remedy Review Board Recommendations -
Grasse River Study Area Superfund Site

FROM: John S. Frisco, Manager 
Superfund Remedial Program
EPA - Region 2

TO: Bruce K. Means, Chair
National Remedy Review Board

I am writing in response to your memorandum, dated May 29, 2002, providing the advisory recommendations of the National Remedy Review Board (NRRB or board) in connection with its review of the proposed remedial action for the Grasse River Study Area Superfund Site in Massena, New York.

Let me first express the region's appreciation to the board for both its thorough review and thoughtful comments on the proposed remedy for the site, and for allowing the participation of the federal natural resource trustees and the St. Regis Mohawk Tribe at the April 23, 2002 meeting. Our specific responses to the board's advisory recommendations are provided below. For convenience purposes, each recommendation is presented in the order identified in your memorandum followed by our response.

Responses to NRRB Advisory Recommendations

Comment 1. The package presented to the board did not adequately compare Alternatives 6, 7 and 8 in terms of risk reduction, reliability, permanence or other measures of effectiveness. Since there are significant cost differences between these alternatives, the board recommends that the region clarify the benefits of the preferred alternative compared to these other alternatives in the decision documents for the site.

Response 1. The region acknowledges the board's comment and believes that the most appropriate remedy for the Grasse River includes a combination of dredging, capping and monitored natural recovery to best meet the statutory and regulatory requirements related to remedy selection. The region further believes that Alternative 8 (dredge > 25 ppm and cap > 5 ppm PCBs in surface sediments) offers the best balance of trade-offs among the twelve alternatives evaluated with respect to the balancing criteria in the NCP.

The region also agrees with the board that the decision documents for the site should be transparent in their comparison of the remedial alternatives. The decision documents will clarify the benefits of the preferred alternative over the other alternatives, with an emphasis on the improvements in risk reduction, permanence and long-term reliability gained from removing the most contaminated sediments from the Grasse River, as well as the cost-effectiveness of the preferred remedial alternative.

Comment 2. The board notes that the selected fish tissue remediation goal of 0.05 ppm (based on human consumption) would not be met in the Grasse River under any of the identified alternatives within the modeled time frame extending to 2030. Nor does the region believe it can attain certain potential ARARs with any of the alternatives evaluated (i.e., ARAR waivers may be required). This is attributed, in part, to the “background” contribution of PCBs. For this reason, the board recommends that the region determine an appropriate background PCB concentration level in fish tissue (if possible) and/or sediment based on areas unaffected by site releases in order to better understand the limitations of all remedial alternatives in attaining very low cleanup targets.

Response 2. The remediation goal of 0.05 ppm PCBs in fish tissue was calculated based on the non-cancer hazard index for the reasonably maximum exposed (RME) adult angler fish consumption exposure pattern from the site-specific risk assessment. As noted by the board and discussed in the region’s package and presentation, none of the remedial alternatives meets this remedial goal within the modeled time frame. Additionally, since the meeting and in response to one of the board’s recommendations, Alcoa has performed model assessments for two additional remedial alternatives: Alternative 11 – capping areas with PCB concentrations greater than one ppm in surface sediments; and Alternative 12 – dredging areas with PCB concentrations greater than one ppm in the surface sediments, with a cap for the dredged areas (see NRRB Comment/ Response 5 below for additional discussion). Neither of these new alternatives is predicted to attain fish tissue levels of 0.05 ppm PCBs by the end of the modeled time frame, although Alternative 12 represents the most aggressive approach to sediment remediation evaluated.

The inability of any of the remedial alternatives to meet the goal is attributable, in part, to “background” PCB loadings, unrelated to the site or specific known sources. For the Grasse River site, there are two major “background” influences. The first is loading from the upstream Grasse River. There are no known PCB sources upstream, but water column measurements have shown low levels of PCBs. The second source is the St. Lawrence River. During periods of low flow in the Grasse River, water will flow from the St. Lawrence upstream into the Grasse River, carrying some PCBs into the water column. Additionally, the New York Power Authority may allow water flow from the St. Lawrence into the Massena Power Canal, some of which may ultimately discharge to the Grasse River at the upstream end of the study area. EPA’s Great Lakes National Program Office (GLNPO) has data on overall water quality in the Great Lakes system (including the St. Lawrence River) and has documented PCB levels throughout the Great Lakes region. GLNPO’s data includes evaluations of sources, and non-source considerations such as water column load and atmospheric contributions (<http://www.epa.gov/grtlakes/>).

As the board is aware, shortly after the region made its presentation, EPA issued the policy statement “Role of Background in the CERCLA Cleanup Program” OSWER 9285.6-07P, dated April 26, 2002. The region has forwarded this policy statement to Alcoa, along with a request that the company assess the available site and regional data vis-a-vis this policy directive. This assessment of “background” data is currently underway. If the available data are adequate, the region may consider the establishment of alternate remedial targets based on background. If the data are insufficient to meet the technical requirements for consideration of background concentration data in accordance with the policy statement, the utility of collecting additional

background samples will be considered

Comment 3. The board supports the region's analysis of alternatives based on their potential to achieve "interim" remediation targets (less stringent, but still significant fish tissue concentrations based on human health). These alternate target tissue concentrations permit a meaningful comparison of short-term performance among alternatives. However, the board notes that the region has not yet completed its ecological risk assessment for the site, and that certain local species (including mink, bats, avian piscivores, etc.) may be at risk even at concentrations in the range of these human health-based interim target fish tissue levels. The board recommends that the region complete the ecological risk assessment, and establish any appropriate ecological effects-based cleanup goals to better guide the selection of a remedy for the site and to ensure environmental protection is achieved with this cleanup. Such ecological effects-based goals also may help discern advantages and disadvantages among alternatives.

Response 3. The region acknowledges the board comment and agrees with the recommendation. Additional ecological information has been developed subsequent to the board meeting. Based on the ecological risk assessment for the site along with this additional information, the region has developed a PRG representing a range of ecological effects-based cleanup targets. This PRG will be included in the site decision documents, along with an analysis of the advantages and disadvantages among alternatives relative to the ecological goals as part of the nine-criteria evaluation.

Comment 4. As presented, the preferred alternative relies heavily upon the stability of a cap to achieve long-term remedy effectiveness. Although this segment of the Grasse River appears to be generally well-suited for a capping remedy, the board notes that such stability may be difficult to achieve in some cases. First, as the region notes, certain near-shore or side-slope areas may be difficult to cap effectively because of relatively shallow depths and the potential for disruptive forces (e.g., erosion, ice scour, slope failure) to damage the cap. Second, the region indicated that for the capping alternatives that also dredge, actual dredging depths may range from one foot to as many as six feet below the river bed. Alternatives which call for capping after dredging were described as utilizing a one foot cap regardless of dredging depth. The board notes that a combination of steep excavation and the one foot cap could result in discontinuities, thereby reducing cap effectiveness. The board recommends that the conceptual design for the cap address these issues to ensure intended effectiveness of the cap and a stable river bed. The board also notes that these design considerations may increase costs (i.e., result in the need for additional cap material in areas of deep excavation), and, if so, these increased costs should be reflected in the decision documents for the site.

Response 4. A number of board comments (i.e., Nos. 4, 6 and 9) discuss various aspects of design and construction of the remedy, particularly related to the cap component, that may affect the ability of the preferred alternative to achieve long-term reliability and effectiveness. The region agrees that a rigorous detailed design will be necessary to ensure that the selected remedy is constructed and maintained effectively. Toward this end, a number of activities have been initiated or undertaken to evaluate design elements that may need to be considered for any remedy selected for the site. These activities are outlined below.

The region is working with the Waterways Experiment Station (WES) of the U.S. Army Corps of Engineers (USACE) relative to the investigation and analysis of the Lower Grasse River, and the suitability of the preferred remedy. WES had prior input into the study of the Grasse River in its review of the Capping Pilot Study work. The personnel at WES include experts in dredging, sub-aqueous capping, and sediment stability. WES has commented that the Grasse River appears to be suitable for a remedy that includes capping and that the concerns raised by the board can be addressed during design and construction to enhance the effectiveness of the cap component. (Relevant correspondence has been added to the administrative record.) The region specifically asked about the “discontinuities” from capping between dredged and non-dredged areas. WES’ recommendation to manage the transitions by creating a gradual slope will be further evaluated in the remedial design. WES has also made recommendations regarding the side slopes and shallow areas that will be further assessed in design. The region anticipates the continued involvement of WES and USACE in the design and construction phases of the remedy for the Grasse River to ensure utilization of the best expertise available.

Since the board meeting, the region requested Alcoa to perform a more detailed analysis of the near-shore areas of the Grasse River, including an assessment of the extent and distribution of PCBs and the contribution of these areas to the overall risks associated with the site. The results of Alcoa’s analysis were distributed to the stakeholders. (The analysis has also been added to the administrative record.) Based on the currently-available data, the assessment indicates the following: less than 10% of the PCBs in the water column originate from the shallow areas; PCBs in fish tissue from these areas are not correlated with surface sediment concentrations; and preferential uptake from local sediments does not appear to be occurring. However, the stakeholders recognize that near-shore data is somewhat limited, that additional data in near-shore areas would be beneficial, and that the extensive contamination throughout the river makes it difficult to distinguish the importance of these areas. Further evaluation will be undertaken during design to determine whether areas near the river shore not currently targeted for removal should be removed (i.e., areas with PCB concentrations less than 25 ppm in surface sediments), or whether a modified capping approach would be necessary. As with the remaining portions of the river, the region believes that the removal of highly-contaminated sediments, including those in near-shore areas, may result in a more reliable and permanent remedy than the capping of such sediments.

Alcoa constructed a seven-acre pilot cap in 2001 to develop site-specific capping information. The associated Capping Pilot Study included monitoring surrounding the construction effort, as well as longer-term monitoring activities. The monitoring program included (among other tasks): measurement of contaminant levels in the cap, particularly in the layer overlying the contaminated sediment, to evaluate mixing during placement and migration of contaminated pore water through consolidation; thickness measurements; erosional studies (i.e., shaker studies and near-bed sediment transport monitoring); and additional groundwater seepage monitoring. Some of the new information developed in connection with the capping study is relevant to the board’s comments regarding the cap. For example, Alcoa evaluated the retention of cap material on the side slopes. The company also developed revised modeling estimates of chemical isolation for the cap design, based on new site-specific data. (This new information has been added to the administrative record.) The data and analysis, to date, support

the region's previous assessment of the potential effectiveness of capping in the Lower Grasse River as a component of an overall remedy for the site. As indicated elsewhere in this memorandum, the technical issues raised by the board involving the cap will be further addressed during design.

Comment 5. Ten remedial alternatives were analyzed for this action. Eight of those involve capping and/or dredging contaminated sediments. The four most comprehensive capping alternatives involve capping all contaminated sediments containing greater than five ppm PCBs. None of the alternatives considered capping at levels greater than one ppm. However, the most comprehensive dredging alternative (Alternative 10) removes contaminated sediment greater than one ppm PCBs. In order to provide an appropriate comparison among alternatives, the board recommends that the region also evaluate an alternative which caps contaminated sediments containing greater than one ppm PCBs. In addition, the board recommends that the region evaluate an alternative that combines the current Alternative 10 ("dredge > one ppm") with a cap for the areas dredged. This latter alternative would provide the most comprehensive approach to sediment remediation, and likely would result in the most protective cleanup. The evaluation of these two alternatives would provide important information for the region in considering the cost effectiveness of the full range of alternatives.

Response 5. With Alcoa's assistance, the region has developed the two additional alternatives recommended by the board. In particular, Alternative 11 involves the capping of sediments with PCB concentrations greater than one ppm in surface sediments. Alternative 12 involves the dredging of river areas with PCB concentrations greater than one ppm in the surface sediments, with a cap for the dredged areas. Alcoa has completed modeling and cost projections for the two new alternatives. The region will issue an addendum to the Analysis of Alternatives Report that evaluates Alternatives 11 and 12 relative to the NCP's remedy selection criteria. The two new alternatives will be included in the proposed plan and ROD which will contain a comparison of all of the alternatives utilizing the NCP criteria, including cost effectiveness.

Comment 6. In addition, the board notes that any selected remedy may require a combination of capping and dredging to ensure appropriate risk reduction as well as long-term reliability (especially in the shallow, near-shore areas, or where historical dredging has left the river bed too steep or otherwise difficult to cap effectively). The board recognizes also that there may be high, localized PCB concentrations that warrant removal as well. For these reasons, the board recommends that the region optimize the dredging and capping components during remedial design to maximize the immediate risk reduction and relatively low cost achieved through an engineered cap, and the longer-term reliability achieved through mass removal in appropriate areas of the river bed.

Response 6. The region fully agrees with the board's recommendation. As indicated previously, it is believed that the most appropriate remedy for the Grasse River includes a combination of dredging, capping and monitored natural recovery to attain permanence, long-term reliability, and risk reduction. The region very much supports the concept of optimizing the dredging and capping components during remedial design to maximize the immediate risk reduction and relatively low cost achieved through an engineered cap, and the longer-term reliability achieved

through mass removal in appropriate areas of the river bed. Specific language in this regard will be included in the decision documents for the site. Additional discussion of this issue is presented in the response to NRRB Comment 4.

Comment 7. The board notes that institutional controls (ICs) are not discussed as a component of each alternative, and yet they will likely be necessary components of all alternatives. The region should evaluate and include with each alternative appropriate ICs, continuing education, warning signs, and/or other outreach programs (like those currently administered by the New York State Department of Health and the St. Regis Mohawk Tribe). These programs and controls should address any short or long-term residual risks from consumption of PCB-contaminated fish or other foods by local anglers or tribal members, and should be discussed in the decision documents for the site.

Response 7. Institutional controls will be evaluated and included in the site decision documents as a common element of all of the alternatives except the “No Action” alternative. The region has been working with the New York State Department of Health (NYSDOH) and the St. Regis Mohawk Tribe to ensure and enhance outreach to the community. Information on fishing advisories has been, and will continue to be distributed at all of the availability sessions and public meetings. In addition, the region is working with NYSDOH to evaluate specific activities that may be appropriate during and after construction of the remedy until fish tissue levels decline.

Furthermore, some of the local governments are working with New York State to establish a local waterfront revitalization plan for the Grasse River (under the Coastal Zone Management Act). The region is working with the local planning group to help ensure that the design of the remedy will consider potential future uses of the river. Future river use will continue to be evaluated as an element that may influence the design, operation, monitoring or inspection requirements of the remedy.

Comment 8. The board notes that a unit cost of \$90 per cubic yard is used for transportation and disposal of dredged sediments regardless of the order of magnitude difference in volume between Alternatives 4 and 10. Since the receiving landfill is on site, even recognizing that transportation costs may be constant, there should be some efficiencies gained in operational costs as volumes increase with a resultant unit cost reduction. The board recommends that the region reexamine the assumptions/rationale behind use of this \$90 figure for the various alternatives.

Response 8. The region is working with its consultant and Alcoa to reexamine some of the cost assumptions for the various alternatives. While the costs may be higher than estimates for some other projects, they are supported by the actual costs of dredging, disposal and partial capping of sediments at another nearby Superfund site in Massena, New York. It should be noted that the unit cost of \$90 per cubic yard has been used for transportation and disposal of dredged sediments for volumes in the range of 48,000 to 515,000 cubic yards. For Alternatives 10 and 12, an additional 1,135,000 cubic yards of sediment have an associated unit cost of \$130 per cubic yard. The higher unit cost for the larger volume is due to additional design costs, as well as

a siting study for a new landfill or series of cells for Alcoa's existing on-site landfill. Alcoa currently has regulatory approval to construct a new cell with a capacity of up to 515,000 cubic yards. Any larger landfill capacity would require further review and approval by New York State.

Comment 9. The preferred remedy includes capping of sediments with surficial PCB concentrations between five and 25 ppm with a 12-inch layer of a 1:1 mixture of topsoil and sand. The 12-inch thickness is intended to serve three purposes: (1) physical isolation of the PCBs in the sediment from the benthic environment; (2) erosion protection (i.e., mitigate the resuspension and transport of sediments to downstream areas); and, (3) chemical isolation (i.e., reduce the flux of dissolved PCBs to the water column). The board notes that the long-term performance of the chemical isolation component will depend on the organic carbon content of the topsoil used in the cap and on the rates of contaminant transport by diffusion and advection through the cap. The board recommends that the region ensure that these factors are adequately considered during the remedial design.

Response 9. The region agrees with the board's recommendation. The thickness of the cap and the cap components will be important factors addressed in the remedial design. Please also see the response to NRRB Comment 4 for further discussion of the cap design issues.

Comment 10. The board notes that the region evaluated ground water only in terms of whether it is a continuing source of contamination to the river. Whether the ground water presents a human health or environmental risk by itself or whether its quality is threatened by river sediment contaminants was not discussed. The board recommends that the region clarify in site decision documents how and when these groundwater-related questions will be addressed.

Response 10. The April 2001 "Comprehensive Characterization of the Lower Grasse River Report" (CCLGR) contains an evaluation of ground water and its relationship to the river. In its presentation to the board, the region portrayed the ground water as a potential source of contamination to the river, rather than as a medium at risk from the migration of contaminants out of the river. This is based on the availability of site-specific data indicating that the Grasse River is more likely to be a "gaining" river than a "losing" river.

Some of the data summarized in the CCLGR supporting the belief that the Grasse River is not a major source of PCBs to ground water include: piezometric head measurements in nearby wells compared to river elevation; seepage meter measurements which were used to calculate area-wide groundwater flux (positive or negative); a bottom survey of water temperature and specific conductivity designed to indicate significant groundwater seeps and discharges; water quality measurements of nearby bedrock wells compared to river water samples; groundwater modeling from the Alcoa facility; and Grasse River modeling.

Furthermore, Alcoa conducted additional groundwater seepage measurements as part of the 2002 monitoring program associated with the Capping Pilot Study. This effort looked at both capped and uncapped areas in the Lower Grasse River over several seasons (spring through fall). The 2002 data support the CCLGR conclusions, and indicate that the Grasse River is generally

“gaining” but that the rates are low and do not appear to be a significant factor in potential PCB migration through a cap.

The board should also note that contaminated ground water at the Alcoa plant is being addressed as part of the facility cleanup under New York State jurisdiction. Even if small local areas in the Grasse River exist where river water discharges to ground water, Grasse River water does not exceed MCLs, and therefore would not be expected to significantly impact groundwater quality. Lastly, groundwater advection is a mechanism that must be evaluated as part of a sub-aqueous cap design. Consequently, groundwater seepage measurement data will be considered in the next phases of the project.

Comment 11. The board notes that New York State Department of Conservation officials did not participate in the meeting or submit comments to the board for its deliberations. Input from the state would have been helpful in reviewing this proposed action for the site.

Response 11. The region acknowledges the board’s comment. This office values the input of the New York State Department of Conservation, and will continue to solicit such input throughout the proposed plan, remedy selection, and design/implementation phases of the project.

In closing, I again want to thank the board for its very comprehensive review of the information presented by the region involving the remediation of the Grasse River site. The board’s valuable input will help ensure that the remedy is selected, designed and constructed in a cost-effective manner.

If you have any questions concerning this correspondence, please do not hesitate to contact me.

cc: JoAnn Griffith